AMENDMENTS TO THE CLAIMS

The following listing of claims supersedes all prior versions and listings of claims in this application:

LISTING OF CLAIMS:

1–21. Cancelled

22. (Currently Amended) A method for monitoring the response of a nervous system of a body to a stimulus, said method comprising:

collecting a set of voltage measurements between selected areas on a surface of the body whilst while current is passed between selected regions of the surface of the body,

wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated a predetermined time after application occurrence of [[the]] a stimulus applied to a nervous system of the body, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

23. (Previously Presented) A method according to claim 22, wherein the set of voltage measurements is used to produce an image representing the distribution of impedance within the body.

24. (Currently Amended) A method according to claim 22, wherein:

the stimulus comprises a series of second stimuli,

a set of voltage measurements is collected during current injection periods initiated after [[the]] application of each second stimuli stimulus, the collection of voltage measurements related to each second stimuli stimulus is initiated at a time delay delayed relative to the respective second stimuli stimulus,

the time delay differs for each second stimuli stimulus, and differences between collected sets of voltage measurements are interpreted as representing changes in nervous system activity over the time difference between the respective time delays.

25. (Currently Amended) A method according to claim 24, wherein [[the]] each set of voltage measurements is used to produce [[an]] a respectively corresponding image representing the distribution of impedance within the body and the thus produced images are compared with each other to identify changes in nervous system activity.

26. (Previously Presented) A method according to claim 22, wherein the applied stimulus is a visual or an auditory stimulus.

5

27. (Previously Presented) A method according to claim 22, wherein measured voltage measurements are filtered using a Kalman filter.

28. (Previously Presented) A method according to claim 22, further comprising applying the stimulus.

29. (Currently Amended) A method according to claim 22, wherein when application of the stimulus is detected, [[and]] said detection starts measurement computation of [[the]] said predetermined time.

30. (Previously Presented) A method according to claim 29, wherein the stimulus occurs spontaneously.

31. (Previously Presented) A method according to claim 30, wherein the stimulus is a feature of an environment in which the body is located.

32. (Currently Amended) A method for monitoring the response of a predetermined part of a nervous system of a body to an applied stimulus, said method comprising:

identifying the predetermined part of the nervous system, applying the stimulus,

passing current between selected regions of a surface of the body, and

6

collecting a set of voltage measurements between selected areas on the surface of the body ~~whilst~~ while current is being passed,

wherein the set of voltage measurements is collected over a predetermined measurement period,

the predetermined measurement period is initiated a predetermined time after application of the stimulus, and said predetermined time is ~~said regions and/or areas are~~ selected on the basis of a neurological model of the nervous system and ~~the applied stimulus such that sensitivity of the derived impedance measurements to changes in~~ the predetermined part of the nervous system for which a response is monitored ~~maximised~~.

33. (Currently Amended) A method according to claim 32, wherein the ~~derived impedance~~ collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

34. (Previously Presented) A method according to claim 32, wherein the stimulus is a visual or auditory stimulus.

35. (Currently Amended) A method according to ~~any one of~~ claim 32, wherein said regions and/or areas are selected on the basis of a neurological model of the nervous system and the applied stimulus such that sensitivity of the derived impedance

1357777

measurements to changes in the predetermined part of the nervous system is

maximized ~~the set of voltage measurements is collected over a predetermined~~

~~measurement period, the predetermined measurement period is initiated a~~

~~predetermined time after application of the stimulus, and the collected voltage~~

~~measurements are compared with reference measurements to determine normal or~~

~~abnormal response of the nervous system~~.

36. (Currently Amended) An apparatus for monitoring the response of a nervous

system of a body to an applied stimulus, said apparatus comprising:

means for applying the stimulus to the body, and

means for collecting a set of voltage measurements between selected areas on a

surface of the body ~~whilst~~ while current is being passed between selected regions of the

surface of the body, wherein the set of voltage measurements is collected over a

predetermined measurement period, the predetermined measurement period is initiated

at a predetermined time after application of the stimulus, and further comprising means

~~are provided~~ to compare the collected voltage measurements with reference

measurements to determine normal or abnormal response of the nervous system.

37. (Currently Amended) An apparatus for monitoring the response of a

predetermined part of a nervous system of a body to an applied stimulus, said

apparatus comprising:

1357777

means for applying the stimulus,

means for passing current between selected regions of the surface of the body, and

means for collecting a set of voltage measurements between selected areas on the surface of the body ~~whilst~~ while current is being passed,

wherein the <u>set of voltage measurements is collected over a predetermined</u> <u>measurement period, the predetermined measurement period is initiated a</u> <u>predetermined time after application of the stimulus, and said predetermined time is</u> ~~said regions and/or areas are~~ selected on the basis of a neurological model of the nervous system and the ~~applied stimulus such that the sensitivity of the derived~~ ~~impedance measurements to changes in the~~ predetermined part of the nervous system <u>for which a response</u> is <u>monitored</u> ~~maximised~~.

38. (Currently Amended) A method of diagnosing a brain dysfunction, <u>said</u> <u>method</u> comprising<u>:</u>

applying a stimulus to a patient, and

collecting a set of voltage measurements between selected areas on a surface of the patient's head while current is being passed between selected regions of the surface of the body,

wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated at a

9

predetermined time after application of the stimulus, and the collected voltage

measurements are compared with reference measurements to determined normal or

abnormal response of the nervous system.

39. (Currently Amended) A ~~data carrier carrying~~ computer-readable computer

program storage medium containing computer program code which, when executed by

~~means to cause~~ a computer ~~to execute~~ effects a procedure in accordance with the

method of claim 22.

40. (Currently Amended) A computer apparatus comprising:

a memory [[for]] storing processor readable instructions;

a processor for reading and executing instructions from said memory;

wherein said memory comprises instructions [[to]] which, when executed, cause

the processor to execute the method of claim 22.

41. (New) A method for monitoring the response of a nervous system of a body

to a stimulus, said method comprising:

collecting a set of voltage measurements between selected areas on a surface of

the body while current is passed between selected regions of the surface of the body,

wherein the set of voltage measurements is collected over a predetermined

measurement period, user input indicating a time delay is received and the

predetermined measurement period is initiated a predetermined time after application of the stimulus determined by the input time delay, and the collected voltage measurements are compared with reference measurements to determine neurological behavior of the nervous system.

42. (New) A method for monitoring the response of a nervous system of a body to a stimulus, said method comprising:

collecting a set of voltage measurements between selected areas on a surface of the body while current is passed between selected regions of the surface of the body,

wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated a predetermined time after application of the stimulus, and the collected voltage measurements are compared with reference measurements to determine neurological behavior of the nervous system.